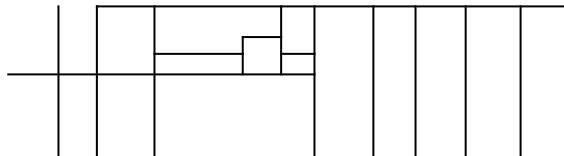


Using Work to Guide Boring-bar. — Boring operations are sometimes carried out using parts of the machine itself as guiding means for the boring-bars, and in some instances it is very essential that boring operations be performed in this way in order to obtain perfect alignment. In Fig. 13 is shown a machine bed with the headstock solid with the bed. In the top view is shown a method for boring out a hole at *B* by the use of two jigs *C* and *D* which are located on the V's of the machine and held down by hook-bolts. If the hole *B* only passes through the part *E* of the head this would be the preferable way of



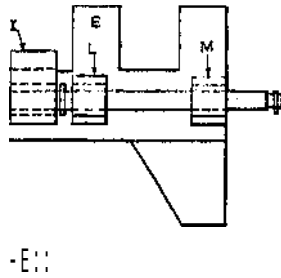


Fig. 13. Example illustrating
Use of Work as a Guide for the
Boring-bar

boring it. In some instances, however, the hole *B* may be required to be in alignment with the holes in a carriage or in a bracket as at *F* and *C*. These holes, of course, can then be used to great advantage as guiding means. Should the holes be too large to fit the boring-bar, cast-iron bushings can be made to fit the holes and the bar. The front elevation in Fig. 13 shows how a cross-slide carriage and apron *I*, which has a hole *I* in line with the holes in bearings *K*, *L*, and *M*, and travels between *K* and *L*, can be bored out by using the brackets *K*, *L*, and *M* to guide the boring-bar. By keying the traveling